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THE MUSK OX IN EURASIA: EXTINCT AT THE PLEISTOCENE-HOLOCENE BOUNDARY OR SURVIVOR TO HISTORICAL TIMES?

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ABSTRACT: The musk ox, *Ovibos moschatus*, now restricted to the North American Arctic, inhabited Eurasia in the Pleistocene, and was thought to have become extinct there at the Pleistocene-Holocene boundary, approximately 10,000 years B.P. However, a study of images depicted on two silver plaques recovered during excavations of 1st century B.C. northern Mongolian tombs supports the view that the musk ox persisted in some locations in Asia until as recently as 2,000 years B.P. Skulls of this species have been recovered from Siberia's Taimyr Peninsula in this century. Two such skulls have been uncertainly dated at 3,800–2,900 years B.P., but show evidence of more recent human intervention. Doubt has been expressed about these datings, and another skull exhibits a fresh appearance. It is proposed that the musk ox may have persisted in this region until much more recently than previously supposed.

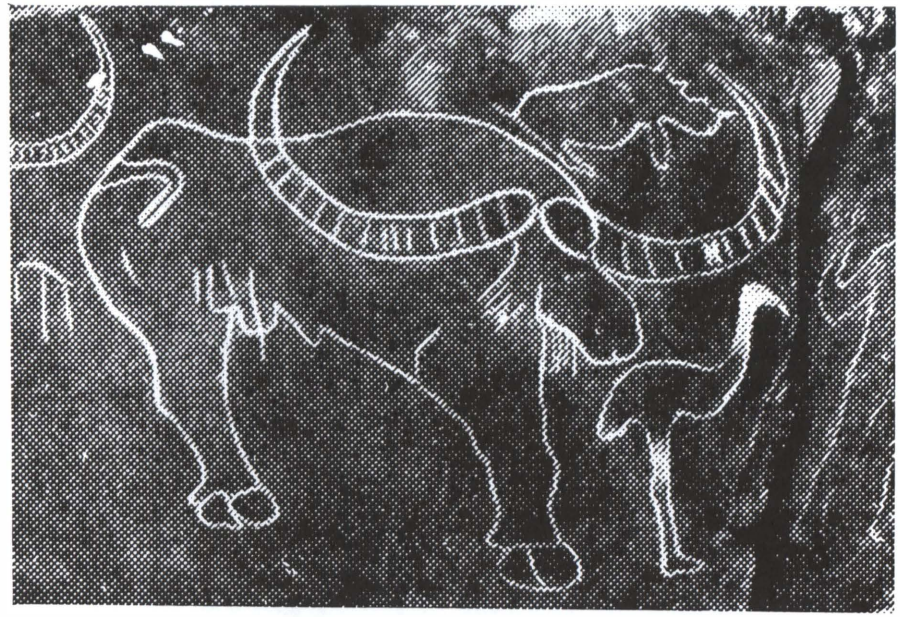
INTRODUCTION

The modern distribution of the musk ox, *Ovibos moschatus*, is restricted to the Arctic tundra of the North American mainland, numerous Arctic islands, and Greenland (Gunn 1982). In the Upper Pleistocene, it was also common in the tundra of Eurasia, as a typical representative of the mammoth steppe fauna complex. Until recently, it was considered to have become extinct in Eurasia (together with many other megafaunal species) at the end of the Pleistocene as a result of climatic changes which led to an altered landscape (Vereshchagin and Baryshnikov 1984).

Archaeological faunal depictions may sometimes represent new and valuable information on the spatial and temporal distribution of both fossil and extant animal species. For example, images of *Pelorovis antiquus*, the long-horned buffalo from the African Pleistocene, appear in north African rock drawings from the Upper Paleolithic (Epstein 1971, Bogoliubskii 1959) (Fig. 1). Several interesting examples have also been proposed recently by Janis (1987). In this paper, I will address both archaeological and osteological evidence which supports the view that the musk ox may have persisted in northern Eurasia throughout the Holocene, and perhaps even until recent centuries.

ARCHAEOLOGICAL IMAGES

In 1924, P. Kozlov, the explorer of Central Asia, discovered burial tombs in the Noin Ula Mountains of Mongolia, about 60 miles (100 km) north of



A

B

FIG. 1.—Pleistocene long-horned African buffalo, *Pelorovis antiquus*, depicted on rock drawings at Fezan, Libya. A. After Epstein (1971). B. After Bogoliubskii (1959).

A

FIG. 2.—Silver plaques recovered from tombs discovered in the Noin Ula Mountains, Mongolia, in 1924, and dated to the 1st century B.C. A. Round plaque; B. Elongated plaque. The author proposes that the animal depicted on the plaques is the musk ox, *Ovibos moschatus*.

Ulan Bator. The tombs date from the 1st century B.C. (Kozlov 1986), and were probably made by the Huns (Werner 1934). The numerous objects recovered from the tombs included two silver plaques, shaped differently but depicting almost the exact same ungulate ornamentation (Fig. 2). The images have high artistic merit, and, despite stylization, are quite detailed and realistic.

Although some subjectivity is always present in the interpretation of such archaeological images, this strong example ensures a high level of reliability, leaving little doubt, in the author's opinion, that what is being depicted is the musk ox (Fig. 3A). Indeed, this idea was not overlooked at the time.

B

FIG. 2.—Continued.

Based on the discovery of the Noin-Ula plaques, Marcus (1933) believed that the musk ox survived in Mongolia until the 1st century B.C. This supposition was later supported by Pidoplichko (1951).

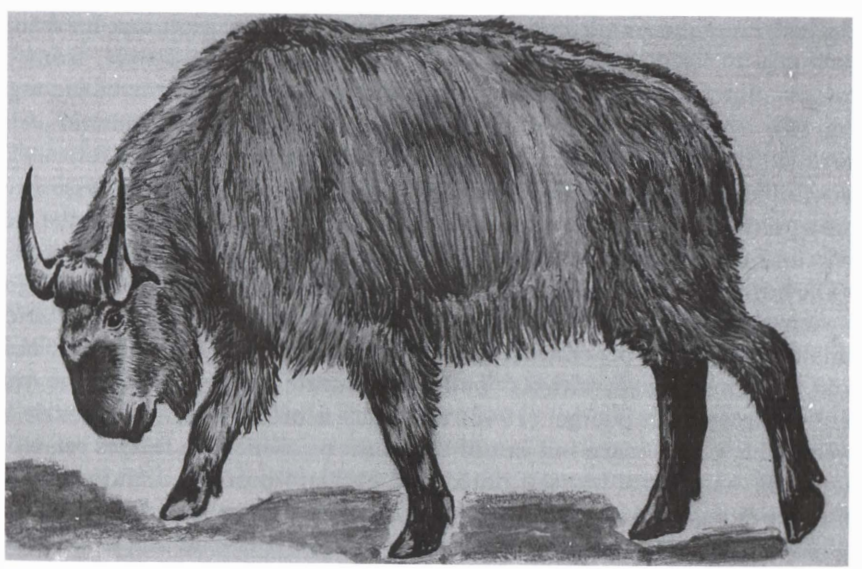
These images, which were clearly made in the local Scythian-Siberian style, have also been subject to other, more mundane interpretations. Boroffka (1926), for example, considered them to be of a "ram" (Fig. 3B), while Rostovtzeff (1929) proposed they were of a "yak" (Fig. 3C). The contemporary interpretation by Brentjes (1982) of a "yak" or a "takin" (Fig. 3D) is obviously influenced by these opinions, and, above all, by Soergel (1942), who undertook his own study of the images on the silver plaques. In his view, the animal depicted is most probably a composite: the body of a takin, *Budorcas taxicolor,* with the head of a musk ox, the latter being known to

A

B

FIG. 3.—Proposed candidates for the Noin Ula depictions: A. Musk ox, *Ovibos moschatus*; B. Argali wild sheep, *Ovis ammon*; C. Yak, *Bos mutus*; D. Takin, *Budorcas taxicolor*. (Drawings from photographs.)

C



D

FIG. 3.—Continued.

the artist from fossil skulls found in the northern permafrost zones, where well-preserved skeletons as well as the carcasses of other Pleistocene species are found to this day.

The creation of chimera-like syncretic creatures is indeed typical of the Scythian-Siberian animalist style. However, such is always done in some symbolic context, which is altogether absent in the Noin Ula plaques. The combining of different animals into one image is always emphasized in such drawings through their natural features, which is not the case with these depictions. Rather, it is evident that the idea was to present the animal in its natural setting.

The surrounding vegetation appears to be larch or Siberian cedar, and low, mountain terrain is shown at its feet. The rugged hills represented are typical of Siberia and northern Mongolia. At first, such a habitat does not seem to be adequate for the musk ox, and seems better suited to the takin, or, as proposed by Soergel, the Tibetan yak, *Bos grunniens* (*mutus*), and the argali wild sheep, *Ovis ammon*. However, the musk ox can also inhabit rocky ground, and even rugged terrain. In fact, Greenland/Alaska musk oxen introduced in 1975 on Wrangel Island, in the East Siberian Sea, usually occupy the higher ground and steeper slopes (V. F. Muzhchinkin, personal communication).

The heads and, in particular, the horns are the key identification features of the images on the plaques. The typical shape of the horns immediately rules out the yak, regardless of some similarity in the covering of body hair (Fig. 3C). A representation of yak horn shape and position can be seen in the image of "bulls" (yaks?), of the same general age and style, from the Ordos culture of south Siberia (Fig. 4). The curve of the horns of the argali (Fig. 3B) would have been depicted in an entirely different manner. Also, the argali has cross-wide rings in relief, not in longitudinal relief forms. The horns of the takin (Fig. 3D) would also be depicted with cross-wise rings, and would be bent sideways and backwards; i.e., shown in perspective sideways and upwards, not to the side and down as it is in the image.

The horns on the Noin Ula plaques (which are to a certain extent analogous in their shape and the basal concrescence with those of the recent African buffalo) could only be, considering the shape and relief, the horns of musk oxen. The broad head, with its "bull-like" muzzle is also typical of the musk ox. I disagree with Soergel (1942) that such a broad head and muzzle are typical only of the takin but not of the musk ox, which, in fact, is related to the takin. As Soergel himself noted, the eyes are protruded and point to a tube-like elongation of the orbits; this is characteristic, above all, of the musk ox. As to the base-marked forms of the muzzle, it is true that it should be less prominent because of the long hair. However, neither is it much more outlined in the takin. The drawing could have been made from memory,

FIG. 4.—Bronze plaque depicting "bulls," apparently yak from a mound in southern Siberia associated with the Scytho-Siberian animalist style, and probably dating from the last centuries of the first millennium B.C. (After Devlet 1976.)

and the artist might merely have observed some cattle to remember some of the details.

The position of the neck and head of the depicted animal is peculiar. Soergel (1942) presumed that the "unnatural" position of the head and the straightened neck were the outcome of the space limitations on the plaques. More likely, this is a case of some stylization, where the habitus and position, typical of the musk ox, are hyperbolized; namely, the hump on the back, the arc-shaped neck, and the head with the muzzle practically facing ventrally down, almost perpendicular to the longitudinal axis of the body. The rendering of the typical features of the habitus and body position of the musk ox, and their hyperbolization through stylization—the large, frontally-placed head, the head and muzzle bent down sharply, the powerful arc-like neck raising above the body—indicate that the animal was observed alive, and does not represent a drawing of the remains of a frozen Pleistocene carcass.

With regard to the emphasized hair at the lower part of the body, there is little reason to accept the views of Soergel (1942), that the hair cover was given in detail; i.e., that it contrasted with the shorter hair of the other parts of the body, which is similar to a certain extent to the takin, and, in particular, to the yak. In fact, such a stylized presentation of the long hair of the abdomen contrasting with the shorter hair of the body appears in images of yaks in the Scythian-Siberian animalist style (Fig. 4). However, in the case of the Noin Ula plaques, the stylized presentation of the long abdomen hair emphasizes more the abundance of hair in general, showing that the animal is characterized by particularly long and dense hair, as is true of the musk ox.

Attention should also be drawn to the details of abundant hair (a mane) around the neck, as well as the stylized framing of the entire body profile with long hair. This creates the general impression of the abundance of hair all over the body.

Osteological Evidence

Some interesting osteological evidence from north Siberia supports the proposition that the musk ox persisted well into the Holocene in Asia. In fact, this bone material indicates that the musk ox may have survived in Asia until recent centuries.

Some years ago, Nikolai K. Vereshchagin, the eminent specialist on Asian Quaternary mammals, reported the 1948 finding of musk ox bone material in the Taimyr Peninsula of northwest Siberia, near Cape Chelyuskin, the northernmost point in all of Asia (Vereshchagin 1959). A Soviet geologist found two skulls laying directly on the sand surface of a limestone rock niche, not far from the coast. The skulls were light-colored and had a fresh appearance. They are now in the collection of the Geological Institute, in Moscow. One of the skulls has two 5 mm holes, as if made by a drill, and the base of the skull appears to have been pierced by a bullet.

The C^{14} dating of the skulls and the horn sheaths in two different laboratories gave ages of 3,800 and 2,900 years B.P. respectively (Vereshchagin 1971). Although there is always some uncertainty as to dating precision, this suggests the persistence of musk ox in Eurasia far beyond the Pleistocene-Holocene boundary, and almost to the time of the Noin Ula silver plaques. Two possibilities exist: either the skulls are a few thousand years old and were previously handled—but in recent centuries—by humans who created the 5 mm holes and the bullet entry; or they are much more recent, and the living animals themselves were shot by hunters within recent centuries. Vereshchagin himself has doubts about the accuracy of the C^{14} datings, which were obtained using old equipment in the 1960's. He has recently expressed the view that the musk ox, adapted to conditions in the recent Asian tundra, survived until much later than assumed, and was probably known to at least the first Russian explorers in the 17th century (Vereshchagin 1988).

A more recent find is also of interest. In 1984, pinniped zoologist V. F. Muzhchinkin (personal communication) found another musk ox skull, again on the Taimyr Peninsula, some 30 miles (50 km) from the Bay of Pronchishchev. This skull, as with the 1948 specimens, was laying on a dune not far from the coast. It had clearly been placed in its position by human hands, as it was covered by some crossed sticks, perhaps to mark its location. Alternatively, the sticks may have had some ritual meaning. Unlike the bones of Upper Pleistocene animals, even those from the permafrost layers in Siberia (which are colored by mineral deposits and to a certain degree fossilized), this skull was white and, like the 1948 skulls, had a contemporary, fresh appearance, suggesting a very recent age. The sticks were fragile and rotten, and resembled, in their degree of conservation, some wooden pylons placed in the vicinity by a Soviet geological expedition which had passed through the area in the 1930's.

Could this skull have come from a Canadian musk ox population which had been introduced in the Taimyr Peninsula nine years earlier? We cannot be certain about this. The 10 musk ox were introduced in 1975 on the eastern shores of Lake Taimyr, about 120 miles (200 km) from the location of the skull find (Lever 1985, Uspenskii 1975). Vereshchagin and Baryshnikov (1984) point out that musk oxen are poorly adapted to migration in modern Siberian tundra due to dense snow cover, being unable to tolerate a snow cover deeper than 12 inches (30 cm). Furthermore, there is no evidence of musk ox migration in the region. On the other hand, the entire peninsula is quite desolate and completely uninhabited, and perhaps such migration could have occurred unseen by humans. Even local hunters do not frequent it for years. There have been no established inhabitants on the peninsula since the creation of the Soviet state, and, historically, only nomadic elk-breeders are mentioned. Perhaps significantly, however, Muzhchinkin states that, although the skull has a contemporary appearance—rather than being thousands of years old—it lacks the fresh appearance of bone which has been exposed for only a few years.

As with the two 1948 skulls, and another found near Lake Taimyr in 1952, the new 1984 skull is too fresh and well-preserved to have come from an animal that died millennia ago. At the same time, it seems not fresh enough to represent the musk ox population introduced in 1975. It thus appears to derive from an original Pleistocene population which persisted in Eurasia into the Holocene, and continued to evolve until extinction in recent centuries. In fact, Vereshchagin has noted that the measurements of the two 1948 skulls correspond more to those of the extant North American population, which likewise has evolved to a size smaller than the original Pleistocene populations.

Conclusion

Archaeological depictions apparently representing the musk ox indicate the persistence of this species in Asia—specifically in northern Mongolia and further north—beyond the Pleistocene-Holocene boundary to as recently as 2,000 years B.P. Some osteological evidence lends credibility to the supposition that this species may have persisted in the Taimyr Peninsula almost to the present time; that is, to at least the past few centuries. A more precise chronology of musk ox extinction in Asia could possibly be determined through further fieldwork in the Taimyr Peninsula, which might result in the acquisition of new osteological material for study.

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